# The impacts of LUA Directive

## Did the LUA Directive increase competition and decrease prices in the market for non-prescription pharmaceuticals?

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# Abstract

LUA Directive was introduced for first time in Norway in 2003 to provide better availability and lower prices for non-prescription pharmaceuticals. The main idea behind implementing such a directive was to increase the competition in the non-pharmaceutical market by letting other retail outlets than the pharmacies to provide non-prescription pharmaceuticals. Based on results from a price investigation by The Norwegian Medicines Agency in 2010, LUA Directive was not very successful to slow down the prices but instead the Directive led to market segmentation and product differentiation.

# Acknowledgments

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# 1: Introduction:

The aim of this thesis is to examine some effects and impacts of the LUA Directive on the pharmaceutical market and to check if the LUA Directive leads to reduced prices and increased availability of the non-prescription pharmaceuticals.

LUA[1] (Pharmaceuticals sold outside of pharmacies) is an arrangement which ensures that the important prescription free pharmaceuticals are available for purchase in locations and outlets outside of the pharmacies. The main purposes of the LUA Directive are to increase the availability of over the counter, OTC, medicines and to increase the competition on price as a result of increased availability. The LUA Directive was first introduced in November 2003.

In 15 of January 2008 the LUA Directive was amended by eliminating the requirement for a permit for sale of prescription free pharmaceuticals outside of the pharmacies. The Norwegian Food Safety Authority (NFSA) took the responsibility to oversee the retail outlets. There are now more than 6000 retail outlets for prescription free pharmaceuticals, excluding the pharmacies, in Norway. (Norwegian Pharmacy Association)

The Norwegian Medicines Agency (NoMA) manages the LUA Directive and conducts different surveys to control the price and availability of the prescription free pharmaceuticals. The latest price investigation was carried out by NoMA and two masters' students from the University of Oslo in October 2010, while similar surveys were also conducted earlier in 2003, 2006 and 2008.

In Norway it has been allowed for shipment of the prescription free medication since 1. January 2009. This new arrangement introduces the internet pharmacies to pharmaceutical markets. There are many internet pharmacies with a physical counterpart in Norway.

In order to find out the different impacts of LUA Directive, this thesis will firstly give a short overview of different market structures; *theory and hypotheses.* Secondly, it describes how and where the data used in this thesis are applied and collected; *method and implementation.* Thirdly, it analyses and describes the different impacts of LUA directive, *results and conclusions.*

[1] LUA: Legemidler Utenom Apotek

## 2: Theory and hypotheses

According to standard economic theory, a directive that opens a market for new entrants will have different consequences depending on the existing market structure. As explained below, in a perfectly competitive market structure, new entrants will have little or no effects on prices and quantities. In this situation the non-prescription pharmaceuticals are already provided at price that is equal to marginal cost. Entrances of new pharmaceutical providers into the market, as like LUA-retail outlets, are not assumed to have any effects on price and the total sold quantity of the non-prescription pharmaceuticals.

Moreover, if there is an imperfect competition market situation, new entrants will lead to new market segmentation and to more market competition. As a result, this will grant lower market prices and higher total quantities. In this case, an entrance of LUA-retail outlets will force down the prices of non-prescription pharmaceuticals and will increase the total quantity supplied. Although the total quantity sold increases, as a result of new market segmentation, the quantity of non-prescription pharmaceuticals in the pharmacies will decrease.

To prevent increased market competition from new entrants, economic theory also predicts that firms will engage in strategic behavior in order to reduce competition. This implies product differentiation, different product pricing and user-friendliness, like longer opening-hours and etc. To avoid competition, pharmacies try to differentiate their pharmaceutical products by providing product usage and product selecting instructions. This is what other pharmaceutical providers than pharmacies, are not allowed to provide. According to economic theory, since LUA-retail outlets are also a part of the market, they should also try to make their pharmaceutical products superior and unique in order to survive in the market. Thus, some LUA-retail outlets, like grocery shops, provide pharmaceutical products at lower prices, while other LUA-retail outlets, like petrol stations and kiosks, provide more availability by being located central and having longer opening-hours than the pharmacies.

The latest price investigation by NoMA in 2010 revealed a difference of 68% in prices between grocery stores and petrol stations on a non-prescription pharmaceutical product, Ibuprofen Ibux Tab 200mg. The lowest price of a packet of 20 tablets Ibuprofen was at kr. 35, 50 at a grocery

store while the price of an identical packet was at kr. 59, 50 at a petrol station. (Prisundersøkelsen 2010)

This chapter has three main sections. The first and the second sections explain the behavior of firms in different market structures. The third section gives us an overview of the total market for non-prescription pharmaceuticals in Norway.

## 2.1: Perfect competition:

Although a market with perfect competition is too exceptional to be seen in the real world, it is still a perfect model to compare other models and firms with. In economic theory, a perfect competition is defined as a market where there are many firms producing homogeneous products[2] with full information to the customers. None of the firms in a perfect competitive market are large enough to have an influence over the price, i.e. they are price takers[3].

Some economists assume that there are an enormous number of buyers and sellers in a perfect competitive market. It is not possible for a single firm to set its prices above the market price without losing all its customers. On the other side, the customers will not find a single firm willing to sell its products cheaper than the market price. Hence both the firms and the customers must take for granted that the market prices are beyond their power to control.

A perfectly competitive market does not allow for transaction costs[4] and firms cannot charge others for externalities[5] (Carlton & Perloff 2005)

[2]Homogeneous products: All firms are selling identical products, and consumers are indifferent between two products produced in two different firms.
[3] Price takers: The price is given by the market, neither buyers nor sellers have the power to influence the prices for what they buy and sell.
[4] Transaction costs: No fees for the sellers and no costs for the buyers to enter the market.
[5] Externalities: Also called, the uncompensated costs.

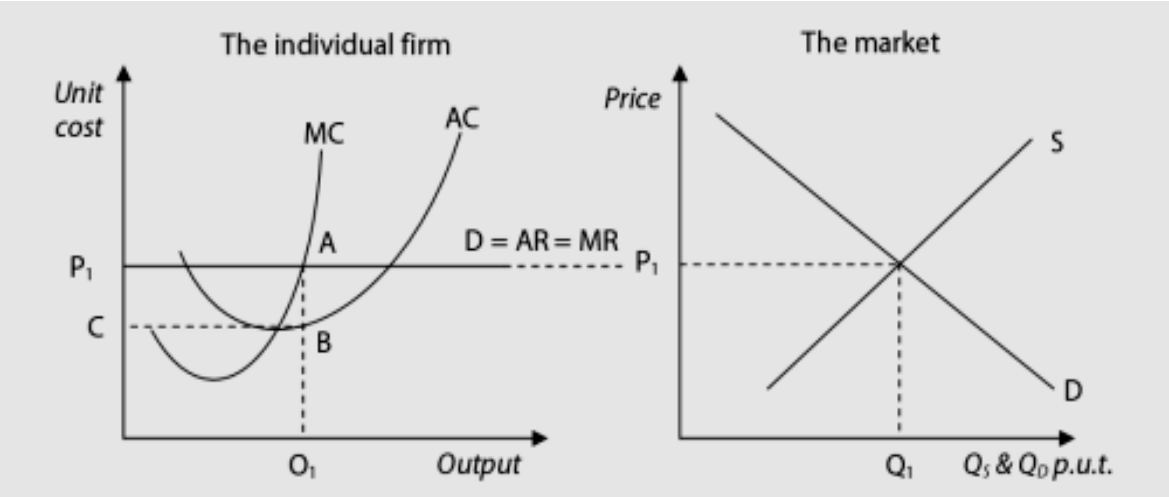


**Figure 2.1: The behavior of a single firm in a competitive market (Carlton & Perloff)**

Figure 2.1 demonstrates how firms in perfect competition are assumed to behave. Firstly, a single firm is not able to charge its customers a price higher than the equilibrium price, $P_1$, without losing all its customers to other firms. As we assumed earlier, the customers in a perfect competitive market have full information about the price and quality of a product. Secondly, the main goal of any firm, including firms in a competitive market, is to maximize its profits, $\pi$.

The competitive firm's profit maximizing function is:

$$\pi = pq\text{-}C\ (q) \qquad (2.1)$$

P denotes the product price, and q stands for the output/ quantity. Price multiplied by quantity, gives the total revenue, TR. C (q) indicates the total cost, TC.

By differentiating $\pi$ with respect to the $q = 0$, we find the first-order condition.

$$p - C'\ (q) = 0 \qquad (2.2)$$

C' (q) indicates the marginal cost, MC.

$$C'\ (q) = d\ (Cq)/\ dq = MC \qquad (2.3)$$

From equation (2.2) and (2.3), we find that:

$$p = MC \qquad (2.4)$$

Equation (2.4), where marginal cost, MC, equals price, p, is a required condition for profit maximization. (Carlton & Perloff 2005)

From figure 2.1 we can see that as long as AC[6] < AR, the firm can make a profit and the firm's profit is maximized with output $O_1$ at point A, where MC crosses AR or MC = p[7]. When the marginal cost curve, MC, is lower than the average cost curve, AC, the costs of producing one additional unit is cheaper than the market price for the firm. Thus an increase in outputs, towards $O_1$, will lead to an increase in profits to the firm. With an output $O_1$, the firm's profit size is $P_1ABC$.

For outputs above $O_1$, the costs of producing one extra unit is higher than the market price, i.e. producing an additional unit will lead to negative profits to the firm. Therefore, due to the theory of perfectly competitive markets, the firm should not increase its outputs above the output level $O_1$.

Figure 2.1 provides also a picture of the total market. The intersection between the market demand curve, D, and the market supply curve, S, determines the equilibrium price, $P_1$, and the equilibrium quantity, $Q_1$. This point is called the competitive equilibrium. The amount that all the firms in the market supply at the equilibrium price is exactly the same as the amount that all the customers demand on that price. All customers pay the same price as the firms or suppliers want to receive. Hence there are no unsatisfied customers or seller in a competitive market. (Carlton & Perloff 2005)

### 2.1.1: Supply and demand shifters in a perfectly competitive market:

Demand curves are considered to be downward sloping as long as the consumers buy less at higher prices. There are some general factors that lead to a shift in demand curves. Firstly, a change in income leads to change in demand. People with high incomes are more likely to

[6] Average cost (AC) = TC/ q = ( FK+VC/ q)
[7] Average revenue (AR) = TR/ q = (pq/ q) = p

demand and consume larger quantities of goods. This will give an outward shift in demand curve. Goods which are consumed more of when higher income, are called normal goods. There are some goods which get less consumed when income increases, such as generic products. These goods are called inferior goods.

Secondly, a change in price of one product will change the demand for the other product if the products are related. In this situation the demand function of product1, is a function of prices for both product1 and product2.

$$x_1(p_1, p_2, m). \tag{2.5}$$

When the demand for product1 increases due to increase of price for product2, then the products are substitutes to each other. The consumers substitute the more expensive product with the less expensive product.

$$\frac{\Delta x1}{\Delta p2} > 0 \tag{2.6}$$

Thirdly, the aspect of insurance will lead to a shift in demand curves. Insurance is assumed to be an important demand shifter in health care sectors and health economics. This will provide consumers lower prices for medical services and change the consumers demand curve outward, i.e. consumers purchase and demand more services.

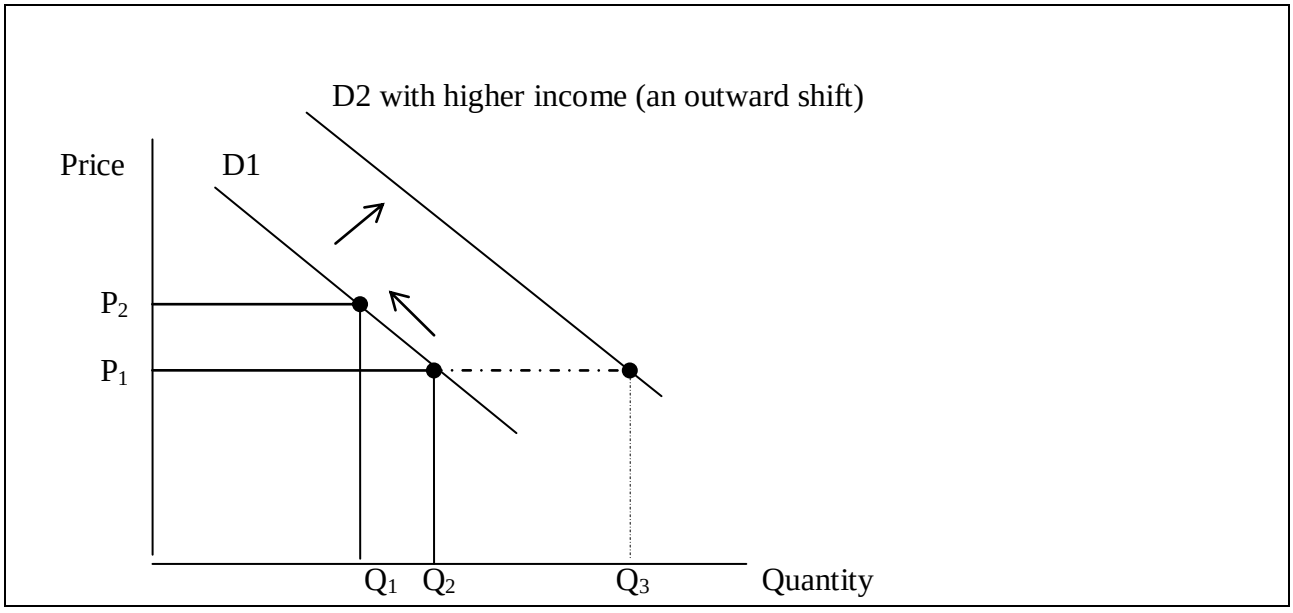


**Figure 2.2: Changes in demand curve.**

Figure 2.2 illustrates how the demand curve shifts with different inputs of factors. At price $P_1$, a consumer demand quantity $Q_2$. An increase in consumer's income will lead to an increased demand, from $D_1$ to $D_2$, and the consumer demands larger quantity, $Q_3$, at the same price $P_1$. When price $P_1$, increases to $P_2$, assuming all other factors are held constant, the consumer's demand of quantity decreases from $Q_2$ to $Q_1$.

The markets' supply curve is considered to be upward sloping as long as all the firms in the market are willing to produce larger quantities at higher prices. Changes and shifts in the supply curves will also, as in the demand curves, depend on some factors. To begin with, improvements in technology will lead to higher affectivity in productions. This means that the firms are able and willing to produce and supply larger quantities at the same market price. When firms increase their productions, the market supply will also increase by shifting outwards, to the right.

The second dimension which changes supply curves is the price of inputs, such as raw materials and wages. Increased input prices will make it costly for the firms to produce, thus the firms will

decrease their production and the market's supply will decrease facing an inward shift in the supply curve.

A third factor is larger market. As many firms enter the market, the supply of goods will increase at the same prices, and this shifts the supply curve to the right.

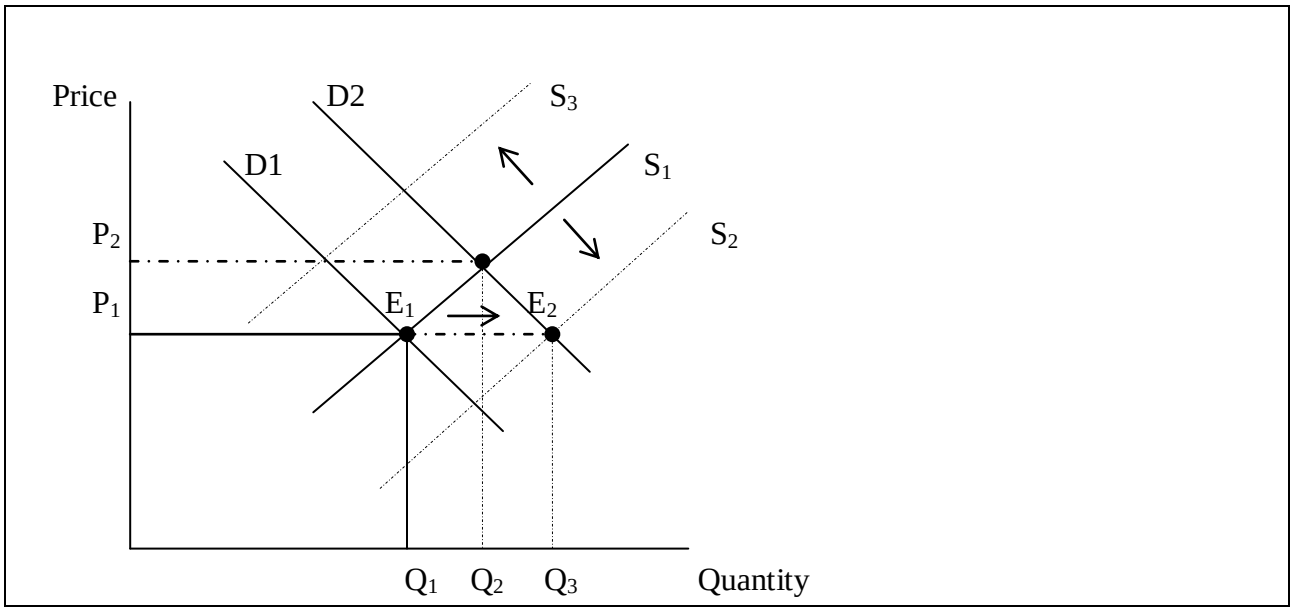


**Figure 2.3: Changes in supply curve.**

Figure 2.3 shows changes in the supply curve. With new technology and lower price inputs, firms are able to produce larger quantities, Q3, without changing their prices. This applies an outward shift to the supply curve, from S1 to S2. Unchanged prices with even more goods available in the market, give the consumers higher purchasing power. In this case the consumers demand for more goods resulting an outward shift in the demand curve, D1 to D2, and a shift in the market equilibrium, E1 to E2. Further, higher input prices will make it less profitable for the firms to produce larger quantities leading to an inward shift of supply curve, S1 to S3. (Carlton & Perloff 2005)

### 2.1.2: Elasticity of demand and supply curve:

The term of elasticity is used to define the percentage change in a dependent variable resulting from a 1 percentage change in the independent variable. Price is used as a concept to characterize the shape of the demand and supply curve.

The elasticity of demand curve is the percentage change in products demanded when a given percentage change in price occurs. The elasticity of demand is always negative, because an increase in price will lead to a decrease in quantity demanded.

$$E_D = (\Delta Q/Q)/ (\Delta P/P) = (Q/P) (\Delta Q/\Delta P) \quad (2.5)$$

In equation 2.5, $\Delta Q$ refers to change in quantity demanded in response to change in price, $\Delta p$.

The elasticity of supply curve is the percentage change in quantity supplied when a given percentage change in price occurs. The elasticity of supply is usually positive, because an increase in price will give the firms more incentives to increase their supply also.

$$E_S= (\Delta Q/Q)/ (\Delta P/P) = (Q/P) ( \Delta Q/\Delta P) \quad (2.6)$$

When a one percent change in price leads to more than one percent change in demand, the demand curve is considered elastic. In this case the absolute value[8] of demand curve is greater than 1. This means that if price increases with one percent, the quantity demanded will reduce more than one percent. If a one percent change in price leads to less than one percent change in demand, the demand curve is considered inelastic and the absolute value for demand is less than 1.

[8] Numerical values for price is always reported as absolute values, eliminating the (-) and (+) signs. See Folland et. The economics of health and health care.

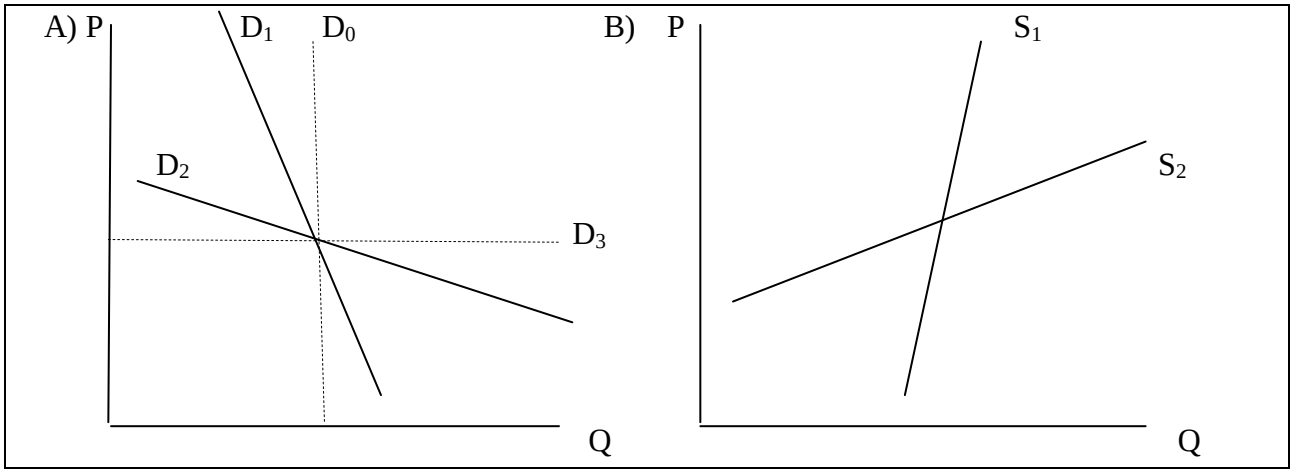


**Figure 2.4: A the elasticity of demand, B the elasticity of supply.**

Figure 2.4A, shows various elasticity of the demand curve. In the figure, $D_1$ is inelastic and $D_2$ is elastic. $D_3$ in the figure is completely flat and has infinite elasticity, meaning that the firm can lose all its customers by increasing its price slightly. Firms in a competitive market are assumed to have an infinite elastic demand curve. $D_0$, which appears in very limiting cases, has zero elasticity.

Supply curves are considered inelastic when a change in demand has no effects on quantity supplied in the market. In this case the firms have reached their production limits and more production will lead to negative profits. $S_1$ in figure 2.4B illustrates an inelastic supply curve. If the firm can supply and produce any quantity at the same price, with a constant cost per unit, then the firm has an elastic supply curve. Changes in demand curve in this case will lead to larger changes in market equilibrium quantity than the market equilibrium price. $S_2$ in figure 2.4B illustrates an elastic supply curve. (Carlton & Perloff 2005)

## 2.2: Monopolistic competition:

"*Where one of the conditions of perfect competition is absent, the presence of others may lead to greater rather than less imperfection"* (Clark 1940, p.241)

The theory of monopolistic competition was developed by the American economist Edward Hastings Chamberlain in 1933. Chamberlain defined a market with many independent customers and firms and with the presents of product differentiation, as a monopolistic competitive market. Monopolistic competitive markets are similar to perfect competitive markets in the way that there are many buyers and sellers in the market and the firms are free to enter and exit the market. But because of product differentiation and geographical fragmentation of the market, the competition in monopolistic competitive markets is imperfect.

In addition to the product differentiation, firms in a monopolistic competition market face a downward sloping demand curve, leading the market towards a monopolistic market. (Chamberlin 1956)

**Monopolistic competition on the short and long run:**

In the short run, when there are not yet too many firms in the market, firms are able to gain some profits by selling their products at high prices. As the other firms enter the market over the long run, they will compete with each other for the customers, leading to lower prices.

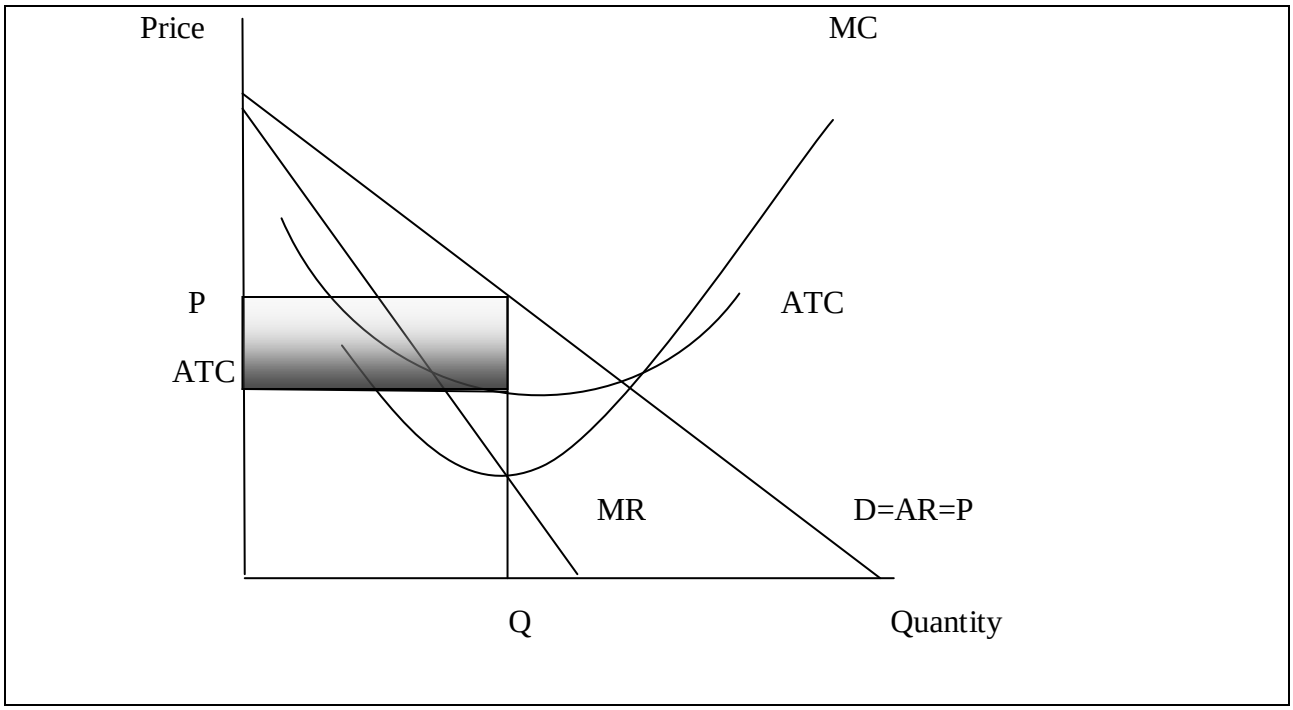


**Figure 2.5: Monopolistic competition on the short run.**

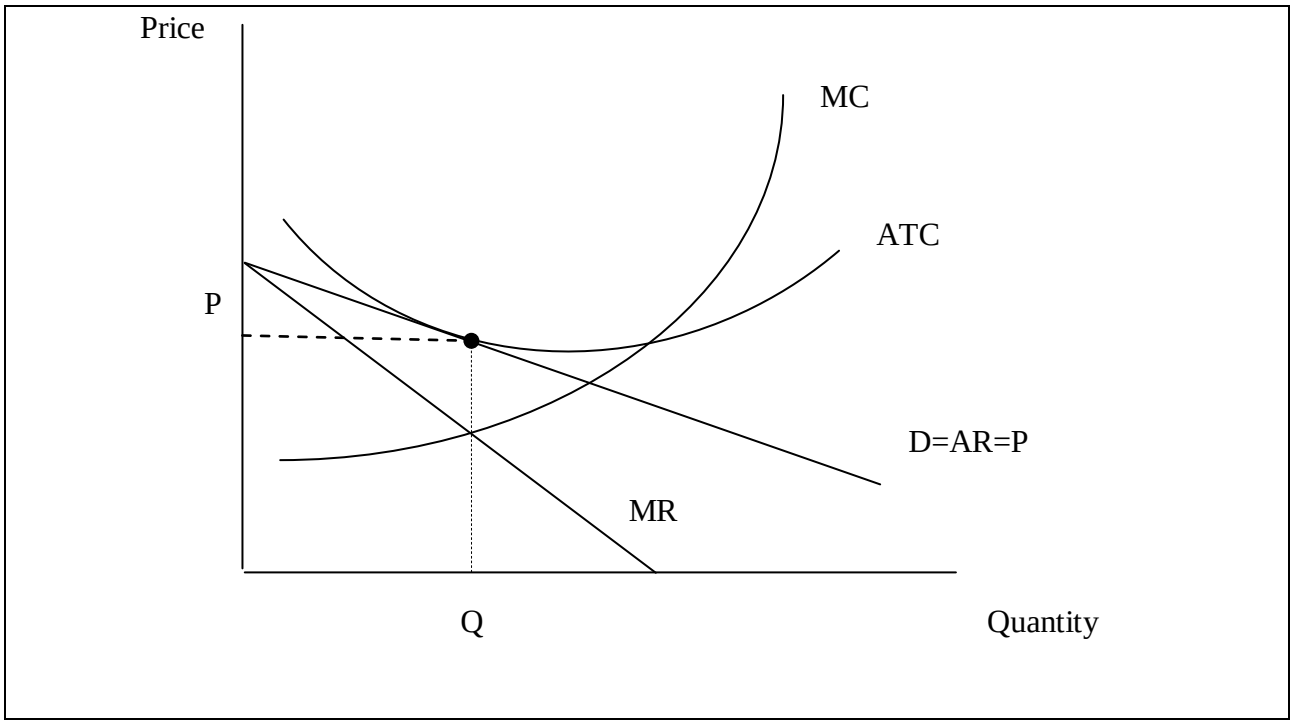


**Figure 2.6: Monopolistic competition on the long run.**

Figure 2.5 illustrates a firm's behavior in a monopolistically competitive market on the short run. The firm produces quantity, Q, where marginal cost curve, MC, and marginal revenue curve, MR, meet. The shadowed area between P, ATC and AR shows the firms' profits made on the short run.

As many firms enter the market in the long run, competition between firms increases, and prices get lower in the market. This is shown in figure 2.6. In this figure, as in figure 2.5, the firm produces quantity, Q, on the point where MC curve meets MR curve. But since in this figure, the ATC curve is above the MR curve, there will be no profits to the firm. Thus firms are not able to make positive profits on the long run.

### 2.2.1: Price discrimination:

Price discrimination occurs when identical products or services are sold at different prices to the different customers. This can exist when three conditions are met. Firstly, a firm should have some market power. This means that the firm is able to set its prices above its marginal costs. Secondly, the consumers should differ in their demands for goods or services. Consumers, who demand for some extra services available, like home delivery, etc., should pay a higher price than those who don't demand for extra services. Thirdly the firm should be able to prevent or limit re-sales by customers who pay lower prices than those who pay higher prices for the same good.

Price discrimination is only applicable for markets where the firms have market power and set their own prices, like monopolistic, oligopolistic and monopolistic competitive markets. In the theory of perfect competition, increasing prices means to lose all your customers to other firms. The firms don't have the power to increase their prices, and therefore price discrimination cannot be exercised in perfectly competitive markets. (McAfee 2008)

### 2.2.2: Product differentiation:

*"Although differentiation leads to higher prices, which harm consumers, differentiation is desirable in its own right. Consumers, value having a choice and some may greatly prefer a new brand to existing ones"* (Perloff 2004, p 470)

Product differentiation is a process of making the products more attractive by exploring its unique qualities to the market. This can be achieved in different ways; like different packaging, different shelf placements, including additional services to the goods and etc. A successful product differentiation will create competitive advantages for the firm and for the seller by giving a new and superior view of the products to the customers.

There are two major types of product differentiation in monopolistic competitive markets where there are many consumers and the firms can easily enter and leave the market. The first type is *the representative consumer model*. In this model all firms compete for all consumers in the market and they try to differentiate their products by trying to make them more attractive to the customers. (Carlton & Perloff 2005)

According to the theory of product differentiation, in the market of non-prescription pharmaceuticals, where there are huge numbers of customers and providers of identical non-prescription pharmaceuticals and where free pricing system[9] exists, the process of differentiating becomes an important tool in order to survive in the market. This implies that different non-prescription pharmaceutical providers differentiate their products and make their products more attractive to the customers and consumers.

The Norwegian Pharmacy Association claims that the pharmaceutical products in pharmacies are differentiated from other LUA-retail outlets in the way that the staffs at the pharmacies provide advice and guidance on collection and use of prescription free pharmaceuticals. This will help the customers to reach their goals of self-care and avoid problems related to side effects from other medicines.

Moreover, the other non-pharmaceutical providers than pharmacy, where the staffs have neither competence nor allowance to provide advice and guidance on selecting or using the medicines, try to differentiate their pharmaceutical products by focusing on other tools like price, location and availability. The price investigation conducted by NoMA in 2010, Prisundersøkelsen 2010, confirms that grocery stores provided non-prescription medicines at lower prices than pharmacies, kiosks and petrol stations[10]. The same price investigation also shows that kiosks and petrol stations provided at higher prices than pharmacies and grocery stores, but were more centrally located and had expanded opening hours. This touches the second type of product differentiation which is *the location or spatial model*.

In this model the firms compete on the consumers view on each firm's product as having a particular geographical location and a characteristic space. Different distances to the products give different preferences to the consumers. On the one side it's more costly for the customers to travel long distances and buy the product they desire. And on the other side the consumers may receive less pleasure from the products bought closed to them, but which deviate much from their ideal products, even when they save the costs of travelling. In location models, the firm's location gives the firm some market power. (Carlton & Perloff 2005)

[9] See part 2.3: The market for non-prescription pharmaceuticals in Norway.
[10] See part 4 (Results) for results and numbers.

In this context, some economists have introduced economic models which provide a better illustration of the situation. First in 1929, Hotelling launched a model, Hotelling's Location Model, with focus on the firms' behavior on locating and product pricing. In this model, products are differentiated only in location of the firms and stores that sell the products.

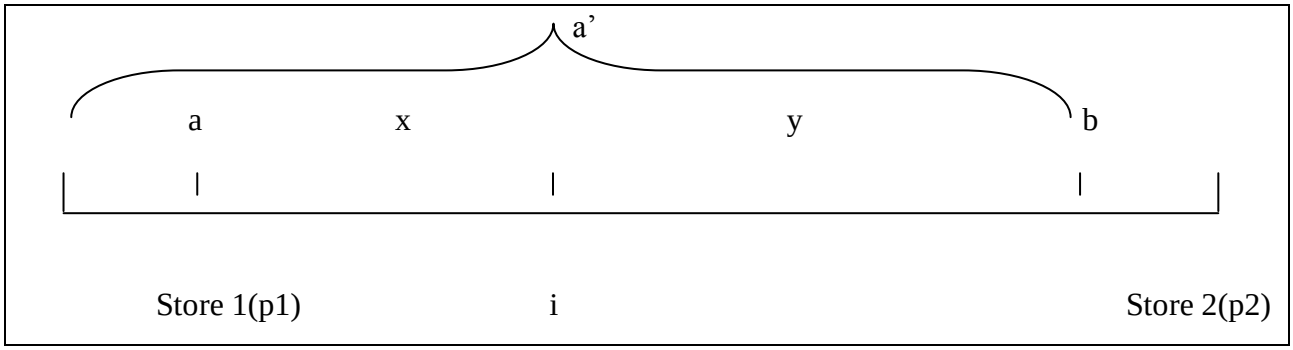


**Figure 2.7:** Hotelling's Town.(Carlton & Perloff (2005), p.222)

Figure 2.6 illustrates Hotelling's Town, which is a narrow town with only one main fixed length street. Store 1 is located *a* miles from the left end of the town and store 2 is located *b* miles from the right end of the town. Consumers don't have any other preferences than purchasing a product from a store as near as possible to them, taking the costs of transportation into the consideration. According to the figure, if the consumer, *i*, wants to purchase a product, let's assume that the consumer purchases a packet of Paracetamol, then will he or she go to the closest store. In this case, the consumer lives *x* miles from store 1 and *y* miles from store 2. Since x<y, the consumer will choose to buy from store 1. Furthermore, if the consumer is informed about the prices p1 (store 1) and p2 (store 2), where p1> p2, and he or she is informed about the transportation costs Tx (store 1) and Ty (store 2), then the consumers choice will depend on following conditions:

- If (p1-p2) >Ty, the consumer will choose store 2.
- If (p1-p2) = Ty, the consumer is indifferent.
- If (p1-p2) < Ty, the consumer will choose store 1[11].

[11] Source: (Carlton & Perloff 2005 )

Even though the Hotelling Location Model assumes a narrow town with only one main street, it may still be appropriate for larger cities with many main streets and many stores. It's because that the Hotelling Location Model focuses most on the distance between the customers and the stores, regardless of how many streets, stores and customers, there are in the city or market. (Carlton & Perloff)

## 2.3: The market for non-prescription pharmaceuticals in Norway:

Since 1995 there have been no restrictions or control on pricing the non-prescription pharmaceuticals in Norway. Before 2003, the pharmacies were the only providers of both prescription and non-prescription pharmaceutical products.

In November 2003, as LUA Directive was introduced, several types of non-prescription pharmaceuticals were also sold in other retail outlets than the pharmacies, such as grocery stores, kiosks, petrol stations and health & wellness shops. This led to new market segmentation, where pharmacies had to share the market for several non-prescriptions with other LUA-retail outlets.

Already in 2005, considerable shares of non-prescription pharmaceuticals were transferred from pharmacies to LUA-retail outlets. As shown in figure below, non-prescription medicines against nasal congestions (Xylometazolin) had the highest percentage of sales outside of pharmacies in 2005, followed by anti-inflammatory (Ibuprofen) and analgesics (Paracetamol) medicines. (LMI, Facts and Figures 2006)

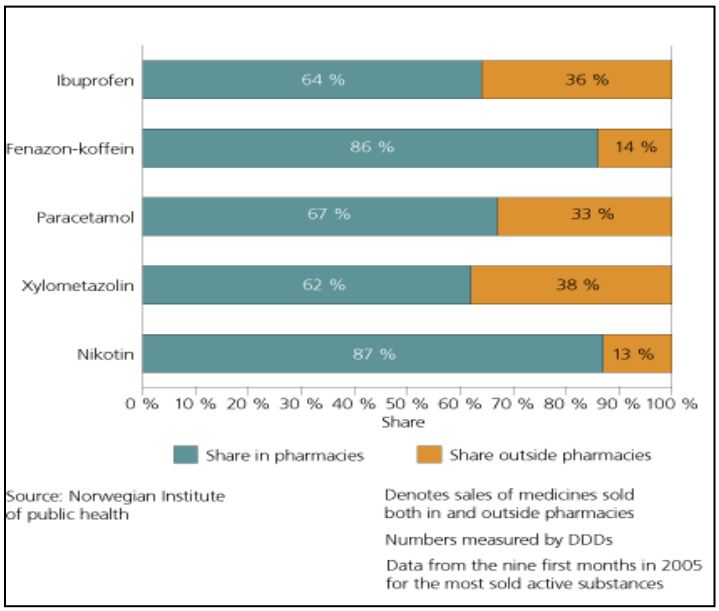


**Figure 2.8: Shares of non-prescription pharmaceuticals outside pharmacies.( LMI, Facts and Figures 2006)**

The transferring process of market shares for non-prescription medicines between pharmacies and LUA-retail outlets have increased evenmore in the recent years. This resulted high share relocations, for some non-prescription medicines, from pharmacies to the LUA-retail outlets. As the figure below illustrates, the pharmacy shares of certain non-prescription medicines have reduced up to 58%, since the LUA Directive was introduced. From the figure below, we can also observe that there are large differences in market shares of the different non-prescription medicines. Among other things, the pharmacy shares of nasal congestions (Xylometazolin) reduced with 58%, followed by Paracetamol, with 48%, and Ibuprofen, with 38%, where Fenazon only reduced with 21%.

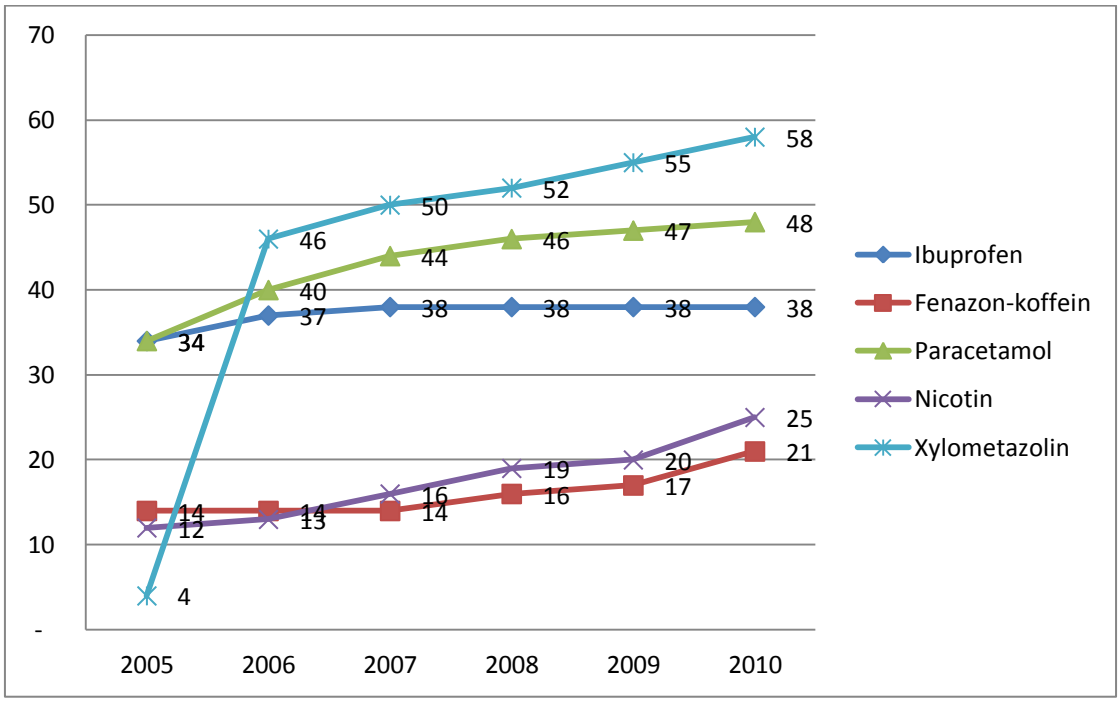


**Figure 2.9: Pharmacies' proportion of DDD for the non-prescription medicines: Source: Pharmacy association.**

In 2010, the non-prescription pharmaceuticals made up for 11,5 percent of the total market sales for pharmaceuticals, measured in pharmacy retail price (PRP). PRP is deifned as prices availalbe for the customers. The total turoverover for the non-prescription pharmaceuticals was arround 1billion Norwegian Krone (NOK) in the same year, measured in pharmacy phurchasing price (PPP).

Moreover, in 2010, the market value of Defined Daily Doses (DDD) for non-prescription medicines had a market share of 15,7% of the total market for pharmaceuticals. The shares of both sales and DDD-volums have decreased since 2000. These are illustrated in figure 2.10. (LMI, Facts and figures 2011)

Defined Daily Dose, DDD, is assumed to be the average maintance dose per day for a medicine used for its main indication in adults.

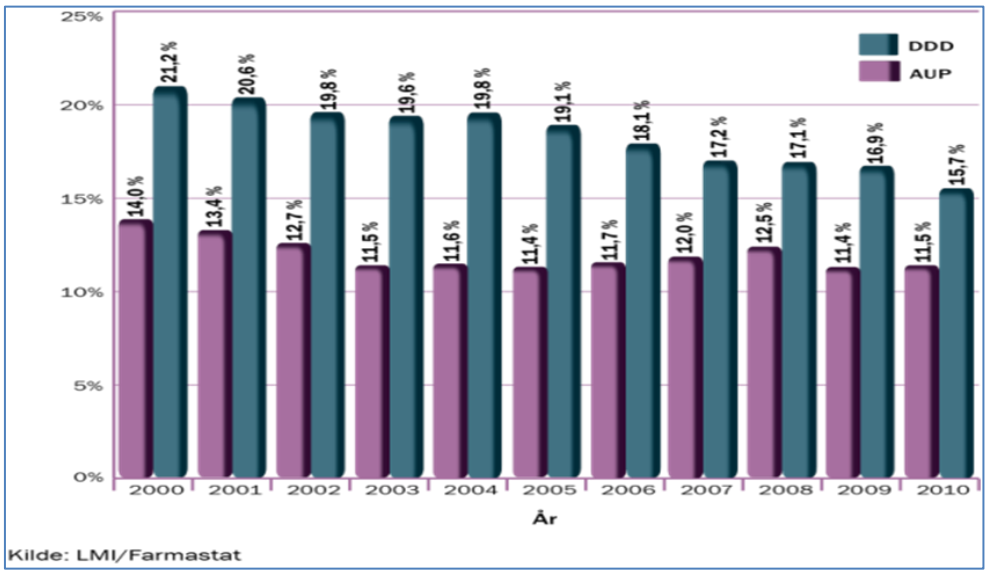


**Figure 2.10: Non-prescription medicines' share of total market in sales and volume.(LMI, facts and Figures 2011)**

According to the numbers from Association of the Pharmaceutical Industry in Norway, LMI, the 25 non-prescription pharmaceuticals with highest turnovers and the top 10 largest companies within non-prescription pharmaceuticals are the followings:

| Plassering 2010 (2009) | Legemiddel | Omsetning AIP 2010, mill. kr | Endring fra 2009 | Eksempel på bruksområde |
|---|---|---|---|---|
| 1 (1) | Otrivin | 94 | -2 % | Tett nese |
| 2 (2) | Paracet | 88 | -6 % | Smerter |
| 3 (3) | Ibux | 85 | -1 % | Smerter |
| 4 (4) | Nicorette | 68 | -5 % | Røykeavvenning |
| 5 (5) | Nicotinell | 66 | 8 % | Røykeavvenning |
| 6 (6) | Pepcidduo | 25 | -21 % | Sure oppstøt |
| 7 (8) | Canesten | 24 | -1 % | Soppinfeksjoner |
| 8 (7) | Alli | 17 | -36 % | Vektreduksjon |
| 9 (10) | Livostin | 16 | -4 % | Allergi |
| 10 (11) | Bisolvon | 14 | 16 % | Luftveislidelser |
| 11 (13) | Duphalac | 12 | 5 % | Forstoppelse |
| 12 (15) | Antix | 11 | 6 % | Munnsår |
| 13 (14) | Noskapin | 11 | -1 % | Hoste |
| 14 (18) | Microlax | 10 | 1 % | Forstoppelse |
| 15 (12) | Nycoplus C-vitamin | 10 | -15 % | Vitamintilskudd |
| 16 (16) | Norlevo | 10 | -3 % | Nødprevensjon |
| 17 (19) | Solvipect | 9 | -3 % | Hoste |
| 18 (17) | Zyrtec | 9 | -10 % | Allergi |
| 19 (24) | Corsodyl | 8 | 0 % | Munnskylling |
| 20 (-) | Pinex | 8 | -12 % | Smerter |
| 21 (-) | Imodium | 8 | -1 % | Diare |
| 22 (-) | Klyx | 8 | 15 % | Forstoppelse |
| 23 (23) | Rhinox | 7 | -8 % | Tett nese |
| 24 (25) | Bacimycin | 7 | -2 % | Sår og hudinfeksjoner |
| 25 (-) | Lamisil | 7 | -1 % | Soppinfeksjoner |

Tall fra 2010
Kilde: LMI/Farmastat

**Table 2.11: List of 25 most sold non-prescription pharmaceuticals. (LMI, Facts and figures 2011)**

| Plassering 2010 (2009) | Firma | Omsetning 2010, AIP mill. kr | Omsetningsvekst | Andel av totalmarkedet |
|---|---|---|---|---|
| 1 (2) | Novartis Norge AS | 205,7 | 4,1% | 20,9% |
| 2 (1) | Weifa AS | 193,3 | -2,9% | 19,7% |
| 3 (3) | McNeil | 139,3 | -12,8% | 14,2% |
| 4 (4) | Nycomed Pharma AS | 98,2 | -5,3% | 10,0% |
| 5 (6) | GlaxoSmithKline AS | 44,9 | -18,4% | 4,6% |
| 6 (5) | Actavis Norway AS | 41,5 | -9,7% | 4,2% |
| 7 (7) | Bayer Schering Pharma | 29,8 | -1,1% | 3,0% |
| 8 (8) | Boehringer Ingelheim | 25,6 | 13,7% | 2,6% |
| 9 (-) | Abbott Norge AS | 21,5 | 4,5% | 2,2% |
| 10 (9) | Antula Healthcare | 19,9 | -4,4% | 2,0% |
| **Sum omsetning alle reseptfrie legemidler** | | **982,3** | **-3,9%** | **100,0%** |

Tall (AIP) fra 2010. Løpende priser.
Kilde: LMI/Farmastat

**Table 2.12: List of top 10 largest non-prescription pharmaceuticals. (LMI, Facts and figures 2011)**

### 2.3.1: LUA Directive:

As mentioned earlier in this thesis, LUA Directive (pharmaceuticals sold outside of pharmacies) was firstly introduced in Norway in November 2003. The purpose of implementing such a directive was to increase price competition and availability of non-prescription pharmaceuticals by allowing other retail outlets than pharmacies to provide non-prescription pharmaceuticals in the market. The intention was to reduce prices or to prevent price increase with the help of market competition.

Since 15$^{th}$ of January 2008, there are no permissions required from NoMA in order to sell non-prescription pharmaceuticals in the market. And since then, The Norwegian Food Safety Authority (NFSA) has the responsibility of controlling the LUA-retail outlets. According to the Norwegian Pharmacy Association, there are more than 6000 LUA-retail outlets in Norway.

**Legal provisions on LUA-retail outlets:**

All sales of certain non-prescription medicines in LUA-retail outlets, must take place in accordance with the Norwegian regulations on the sale of prescription free medicines. (NoMA)

Staffs in the LUA- outlets are not allowed to engage in marketing and recommendation of any pharmaceutical products they are providing. They are also not allowed to sell non-prescription medicines to customers under 18 years old. (Lovdata)

In addition, LUA-retail outlets should make sure that the pharmaceutical products they are providing are physically inaccessible to the customers. This implies that the pharmaceuticals are either locket in a cabinet or located behind their service counters. (NoMA)

The LUA-retail outlets can only provide a maximum amount of one packet of non-prescription painkiller medicines with same active ingredients to the customers. This means that the LUA-retail outlets cannot sell two packets of paracetamol or two packets of ibuprofen to the same customer at the same time. Moreover, if a customer wants to buy one packet of paracetamol and one packet of ibuprofen (total two packets, but different active ingredients), then there should not be any inconveniency for the LUA-retail outlets to sell. (NoMA)

**Non-prescription medicines outside of pharmacies:**

The table below provides a list of all the non-prescription pharmaceutical products which can be sold outside of the pharmacies. Furthermore, this table underlines some restrictions on the non-prescription pharmaceuticals due to the products' packet sizes and concentration.

| ATC | Virkestoff | Styrke | Formuleringer | Begrensninger |
|---|---|---|---|---|
| A02B X13 | Alginsyre | Alle reseptfrie | Orale formuleringer | |
| A02A D01 | Aluminium-, kalsium- og magnesiumforbindelser | Alle reseptfrie | Orale formuleringer | |
| A11G A01 | Askorbinsyre (vitamin C) | Alle reseptfrie | Orale formuleringer | |
| D10A E01 | Benzoylperoksid | Alle reseptfrie | Topikale formuleringer | |
| D08A J03 | Cetylpyridin | Alle reseptfrie | Topikale formuleringer | |
| R06A E07 | Cetirizin | Alle reseptfrie | Tabletter | 30 tabletter |
| R06A E03 | Cyklizin | Alle reseptfrie | Tabletter | 10 tabletter |
| D08A C01 | Dibrompropamidin | Alle reseptfrie | Topikale formuleringer | |
| R06A X22 | Ebastin | Alle reseptfrie | Tabletter | 30 tabletter |
| R05C A10 | Ekspektorantia | Alle reseptfrie | Orale formuleringer | |
| A02B A03 | Famotidin[1] | Alle reseptfrie | Tabletter | 24 tabletter |
| A02B A53 | Famotidin, kombinasjoner[1] | Alle reseptfrie | Tyggetabletter | 24 tyggetabletter |
| N02B B51 | Fenazon m/koffein | Alle reseptfrie | Tabletter | 20 tabletter |
| B03B B01 | Folsyre | Alle reseptfrie | Orale formuleringer | |
| D07A A02 | Hydrokortison | Alle reseptfrie | Krem, salve | 1 tube |
| M01A E01 | Ibuprofen | 200 mg | Tabletter | 20 tabletter |
| A06A C01 | Ispaghula (loppefrø) | Alle reseptfrie | Orale formuleringer | |
| A12A A04 | Kalsiumkarbonat | Alle reseptfrie | Orale formuleringer | |
| A12A A06 | Kalsiumlaktoglukonat | Alle reseptfrie | Orale formuleringer | |
| A02A C01 | Kalsiumkarbonat | Alle reseptfrie | Orale formuleringer | |
| S01G X08 | Ketotifen | Alle reseptfrie | Øyedråper | 1 flaske/pakke |
| D08A C02 | Klorheksidin | Alle reseptfrie | Topikale formuleringer | |
| D04A X | Krotamiton | Alle reseptfrie | Topikale formuleringer | |
| A06A D11 | Laktulose | Alle reseptfrie | Orale formuleringer | |
| R01A C02 | Levokabastin | Alle reseptfrie | Nesespray | 1 flaske |
| R01A C02 | Levokabastin | Alle reseptfrie | Øyedråper | 1 flaske |
| A07D A03 | Loperamid[1] | Alle reseptfrie | Tabletter, kapsler | 16 tabletter |
| A07D A03 | Loperamid[1] | Alle reseptfrie | Mikstur | 100 ml |
| R06A X13 | Loratadin | Alle reseptfrie | Tabletter | 30 tabletter |
| R06A E05 | Meklozin | Alle reseptfrie | Tabletter | 10 tabletter |
| A01A A01 | Natriumfluorid | Alle reseptfrie | Orale formuleringer | |
| R01A C01 | Natriumkromoglikat | Alle reseptfrie | Nesespray | 1 flaske |
| S01G X01 | Natriumkromoglikat | Alle reseptfrie | Øyedråper | 1 flaske |
| N07B A01 | Nikotin[3] | Alle reseptfrie | Depotplaster | |
| N07B A01 | Nikotin[3] | Alle reseptfrie | Inhalator | |
| N07B A01 | Nikotin[3] | Alle reseptfrie | Sublingvaltabletter | |
| N07B A01 | Nikotin[3] | Alle reseptfrie | Tyggegummi | |
| N07B A01 | Nikotin[3] | Alle reseptfrie | Sugetablett | |
| R01A A05 | Oksymetazolin[2] | 0,25 mg/ml | Nesespray | 1 flaske |
| R01A A05 | Oksymetazolin[2] | 0,5 mg/ml | Nesespray | 1 flaske |
| R01A A05 | Oksymetazolin[2] | 0,25 mg/ml | Nesedråper | 1 pakke |
| R01A A05 | Oksymetazolin[2] | 0,5 mg/ml | Nesedråper | 1 pakke |
| N02B E01 | Paracetamol[1] | Alle reseptfrie | Stikkpiller | 10 stikkpiller |
| N02B E01 | Paracetamol[1] | Alle reseptfrie | Tabletter /brusetabletter | 20 tabletter |
| N02B E01 | Paracetamol[1] | Alle reseptfrie | Dosepulver | 12 dosepulver |
| N02B E01 | Paracetamol[1] | Alle reseptfrie | Mikstur | 60 ml |
| A02B C01 | Omeprazol | Alle reseptfrie | Enterokapsler/ enterotabletter | 14 kapsler/ tabletter |
| A02B A02 | Ranitidin | Alle reseptfrie | Tabletter/brusetabletter | 24 tabletter |
| D11A C03 | Selenforbindelser | Alle reseptfrie | Topikale formuleringer | |
| A03A AX | Silikonforbindelser | Alle reseptfrie | Orale formuleringer | |
| A11E A | Vitamin B kompleks | Alle reseptfrie | Orale formuleringer | |
| A11H A03 | Vitamin E | Alle reseptfrie | Orale formuleringer | |
| D11A F | Vorte- og hudetsende midler | Alle reseptfrie | Topikale formuleringer | |
| R01A A07 | Xylometazolin[2] | Alle reseptfrie | Nesespray | 1 flaske |
| S01X A20 | Øyemidler | Alle reseptfrie | Topikale formuleringer | |

*[1] Kun ett preparat med samme virkestoff kan selges til en kunde.*
*[2] Kun ett oksymetazolin eller xylometazolin preparat kan selges til en kunde. Styrker og pakninger godkjent til behandling av barn under 1 år kan ikke omsettes i ordningen.*
*[3] Nikotinholdige preparater som inneholder 2 mg nikotin eller mindre per bruksferdig dose kan selges uten særskilt tillatelse fra Statens legemiddelverk, jf. § 3-b*

**Table2.1: The list of the non-prescription pharmaceuticals in LUA Directive. Source: NoMA**

**The minimum product assortment:**

In order to not let the choice of the customers, among the various analgesic non-prescription medicines, be determined on what the stores want to sell rather than what the customers want to buy, The Norwegian Medicines Agency (NoMA) imposed a requirement of a minimum product assortment.

LUA-retail outlets which provide prescription-free types analgesics and anti-inflammatory medicines should at least have following non-prescription medicines on their shelves:

| **Active ingredient** | **Consentration** | **Volum / Packet szie** | **Form** |
|---|---|---|---|
| Paracetamol | 500mg | 20 Tabletter | Tabletter |
| Paracetamol | 250mg | 10 stikkpiler | Stikkpiler |
| Paracetamol | 24mg/ ml | 60 ml | Mikstur |
| Ibuprofen | 200mg | 20 Tabletter/ kapsler | Tabletter/ Kapsler |

**Table2.2:** The minimum product assortment (Analgesics and anti-inflammatory medicines). Source: NoMA

LUA-retail outlets which provide nasal congestions are required to have at least the following types on their shelves:

| **Active ingredient** | **Consentration** | **Volum/ Packet size** | **Form** |
|---|---|---|---|
| Xylometazolin | 1,00 mg/ ml | 10 ml | Nesespray |
| Xylometazolin | 0,50 mg/ ml | 10 ml | Nesespray |

**Or**

| | | | |
|---|---|---|---|
| Oksymetazolin | 1,00 mg/ ml | 10 ml | Nesespray |
| Oksymetazolin | 0,50 mg/ ml | 10 ml | Nesespray |

**Table2.3: A list of minimum product assortment (Nasal Congestions). Source: NoMA**

Although it is a restricted requirement that the whole, not just parts, of the minimum product assortment is available in order to provide any of the products, LUA-retail outlets can still sell these products if the products missing are expected to be replaced in a short period of time. (NoMA)

# 3: Method and implementation:

The Norwegian Medicines Agency (NoMA) is the in charge of LUA-directive and regularly carries out surveys with which they investigate prices and availability of the non-prescription drugs in both pharmacies and other outlets for non-prescription drugs than the pharmacies.

The price investigation which was conducted by NoMA and two master students from UIO (including Sulaiman Rahmani) in 2010 is the main data source for this thesis. Data for the investigation were collected by the two master students and a supervisor from NoMA. All calculations, figures and tables used in this investigation are made by the two master students only, and have been sent to NoMA for a last supervision before publication.

This investigation includes 78 different prescription free pharmaceuticals in 13 different pharmacies, 24 retail outlets (including: grocery stores, kiosks, petrol stations and health & wellness shops) and 4 internet pharmacies, both in the area around Oslo and in Fredrikstad.

## 3.1: The products:

The non-prescription pharmaceuticals in this price survey were mainly taken from the most observed pharmaceuticals in the earlier price surveys from 2006 and 2008. Additionally, the 25 non-prescription drugs with highest turnover[12] and the 10 best-sold non-prescription drugs in both pharmacies and other LUA-outlets[13] are included in this price survey. Since pharmacies also had generic alternatives for the most of the prescription free drugs, a selection of generic drugs were included after what was available in different pharmacies. (Prisundersøkelsen 2010, NoMA)

| | Products | Product Codes |
|---|---|---|
| 1 | Ibuprofen Ibux tab 200 mg 20 ENPAC | 153569 |
| 2 | Ibuprox 200mg 20stk | 011881 |
| 3 | Ibuprofen Generisk 20 ENPAC (Ibumetin) | 532556 |
| 4 | Phenazone, comb Fanalgin tab 20 ENPAC | 473439 |
| 5 | Paracetamol Paracet tab 500 mg 20 ENPAC | 517128 |
| 6 | Paracetamol Paracet tab 500 mg 20 ENPAC, avlange | 100206 |
| 7 | Paracetamol Generisk 500mg 20ENPAC (runde) | 015043 |
| 8 | Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml | 166440 |
| 9 | Xylometazoline Generisk nesespray Naso | 015050 |
| 10 | Xylometazoline Otrivin 1mg/ml mentol | 166451 |
| 11 | Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml (Barn) | 166097 |
| 12 | Xylometazoline Generisk nesespray Naso 0,5mg/ ml (Barn) | 015127 |
| 13 | Nicotine Nicorette tyggegymmi 2 mg fruitmint 105 ENPAC | 032715 |
| 14 | Nicotine Nicorette tyggegummi 2 mg (peppermynte) 105 ENPAC | 015452 |
| 15 | Nicotine Nicorette tyggegummi 2 mg (peppermynte) 210 ENPAC | 015463 |
| 16 | Nicotine Nicorette tyggegummi 4mg ( Freshmint) 210 ENPAC | 030687 |
| 17 | Nicotine Nicorette tyggegummi 2 mg ( Nøytral smak) 210 ENPAC | 031583 |
| 18 | Nicotine Nicorette tyggegummi 4 mg ( Nøytral smak) 105 ENPAC | 400168 |
| 19 | Nicotine Nicorette tyggegummi 4 mg ( Peppermynt) 105 ENPAC | 015437 |
| 20 | Nicotine Nicorette tyggegummi 4 mg ( Freshmint) 105 ENPAC | 017380 |
| 21 | Nicotine Nicorette tyggegummi 2mg ( Freshmint) 210 ENPAC | 030678 |

[12] The Association of the Pharmaceuticals Industry in Norway, LMI (Legemiddelindustriforeningen) : Tall og Fakta 2010.
[13] The Norwegian institute of Public Health. Drug Statistics 2010:1.

| | | |
|---|---|---|
| 22 | Nicotine Nicotinell tyggegummi 2 mg (frukt) 96 ENPAC | 019793 |
| 23 | Nicotine Nicotinell tyggegummi 2 mg (frukt) 204 ENPAC | 008328 |
| 24 | Nicotine Nicotinell tyggegummi 2 mg (frukt) 24 ENPAC | 011226 |
| 25 | Nicotine Nicotinell tyggegummi 2 mg (Lakrissmak) 96 ENPAC | 019339 |
| 26 | Nicotine Nicotinell tyggegummi 2 mg (peppermynte) 96 ENPAC | 019782 |
| 27 | Nicotine Nicotinell tyggegummi 2 mg (peppermynte) 204 ENPAC | 008339 |
| 28 | Nicotine Nicotinell tyggegummi 4 mg (frukt) 96 ENPAC | 019670 |
| 29 | Paracet mikstur 24 mg/ml 60 ml | 522433 |
| 30 | Paracet stikkpille 250 mg 10 stk | 084970 |
| 31 | Ketoconazole Fungoral Sjampo 2% 60 ml | 049502 |
| 32 | Fenazon koff sterke Tabletter 20 ENPAC | 598755 |
| 33 | Oxymetazoline Rhinox nesespray 0,5 mg 10 ml | 571299 |
| 34 | Levocabastine Livostin øyedråper 0,5 mg 4 ml | 014290 |
| 35 | Chlorhexidine Corsodyl munnskyll 2 mg 300 ml | 152025 |
| 36 | Clotrimazole Canesten Krem 1 % + 6 vagitorer komb pak | 416982 |
| 37 | Paracetamol Panodil Tabletter 500 mg 20 enpac | 409193 |
| 38 | Xylometazoline Zymelin nesespray 1 mg 10 ml | 566380 |
| 39 | Paracetamol Pamol Tabletter 500 mg 20 enpac | 444323 |
| 40 | Nycoplus Calcium, Calcigran Tabletter 100 stk | 491605 |
| 41 | Loperamide Imodium Tabletter 2 mg 16 enpac | 126326 |
| 42 | Loperamide Mylan Generisk 2 mg 16 enpac | 011692 |
| 43 | Alli, Oslistat 60mg, 84 stk (kapsler) | 165295 |
| 44 | Pepcidduo, 10mg Tyggetablett, 12 stk | 006859 |
| 45 | Pepcidduo, 10mg Tyggetablett, 24 stk | 006891 |
| 46 | Bisolvon 0,8mg/ ml mikstur 125ml (barn) | 097260 |
| 47 | Bisolvon 1,6mg/ ml mikstur 125ml | 015943 |
| 48 | Bisolvon 8mg oppløselige tabletter, 50stk | 045051 |
| 49 | Bisolvon 8mg tabletter, 50stk | 465757 |
| 50 | Duphalac 667mg/ ml, 200ml | 182592 |
| 51 | Laktulose 667mg/ml 200ml Generisk | 921536 |
| 52 | Duphalac 667mg/ ml, 500ml | 186601 |
| 53 | Laktulose 667mg/ml 500ml Generisk | 901893 |
| 54 | Duphalac 667mg/ ml, 1000ml | 019828 |
| 55 | Laktulose 6667mg/ml 1000ml Generisk | 936535 |
| 56 | Noskapin Mikstur 2,2mg, 100ml | 544999 |
| 57 | Noskapin Mikstur 2,2mg, 250ml | 527473 |
| 58 | Noskapin Tabletter 50mg, 20stk | 545434 |
| 59 | Noskapin Tabletter 50mg, 50stk | 545442 |
| 60 | Antix krem 5%, Pumpeflaske 2g. | 094596 |
| 61 | Norlevo Tablett, 1,5 mg /1sk (krise prevensjon) | 034489 |
| 62 | Zyrtec, 10mg, Tabletter, 30stk | 024101 |

| | | |
|---|---|---|
| 63 | Zyrtec Generisk 10mg 30 stk / Ratiopharm citrizen) | 048461 |
| 64 | Zyrtec, 10mg, Tabletter, 7stk | 586602 |
| 65 | Cetirizin ratiopharm 10 mg 7 stk (generisk) | 011016 |
| 66 | Microlax, 5ml x 12 (tube) | 173344 |
| 67 | Microlax, 5ml x 4 (tube) | 041996 |
| 68 | Solvipect Mikstur 100ml | 091405 |
| 69 | Solvipect Mikstur 250ml | 512533 |
| 70 | Pinex, Stikkpiller 250mg 10 stk | 488478 |
| 71 | Pinex, Tabletter 500mg 20 ENPAC ( Byttebar med paracet) | 526749 |
| 72 | Corsodyl Dental Gel, 50g | 010959 |
| 73 | Flux Fluroskyll 500ml (0,05%) | 902594 |
| 74 | Flux Fluroskyll 50ml (0,05%) | 902629 |
| 75 | Flux Tyggetabletter 0,25MG 200STK Peppermynte (0-3 år) | 542076 |
| 76 | Flux Tyggetabletter 0,50MG 200STK Peppermynte fra 3 år til 11 år | 542092 |
| 77 | Flux tyggetabletter 0,75mg 200sth Peppermynte (for voksne og eldre barn) | 542100 |
| 78 | Postafen 25mg 10stk | 165787 |

**Table 3, 1: The list of the non-prescription pharmaceutical products. Source: Prisundersøkelsen 2010, NoMA.**

## 3.2: The pharmacies and the internet pharmacies:

In this price investigation, there are investigated 13 pharmacies. Where, one is a hospital pharmacy, 9 pharmacies are from the 3 leading chain pharmacies in Norway[14] and 3 pharmacies which are independent[15]. (Prisundersøkelsen 2010, NoMA)

In addition to these 13 pharmacies, there are also included 4 internet pharmacies into this investigation. 2 of these pharmacies are independent and 2 of them are linked to NMD AS and Alliance Boots Healthcare Norway AS.

[14] The three leading chain pharmacies are: NMD AS, Apotek 1 Norway AS and Alliance Boots Healthcare Norway AS.
[15] Not vertically integrated in any chain pharmacies.

## 3.3: The LUA-retail outlets:

There are investigated 24 different outlets for non-prescription drugs. This includes 11 grocery stores, 2 health and wellness shops, 7 kiosks and 4 petrol stations in both Oslo and Fredrikstad. (Prisundersøkelsen 2010, NoMA)

## 3.4: The price collection:

All the prices for this investigation are collected in weeks 39 and 40 in 2010 without any prior notice to the pharmacies or LUA-retail outlets about the survey. Prices in LUA-retail outlets are provided by stuffs on duty in the retail outlets and are also checked on the shelves by representatives from the NoMA. In the pharmacies the prices are collected and handled from their own pricing system by NoMA.

All the prices in this survey are measured in the retail price. I.e. VAT of 25% and other fees like supervision fees, LUA fee, drug sale fees are included in to the prices. The conversion to the real values is done using the consumer price index. (Prisundersøkelsen 2010, NoMA)

## 3.5: The availability and price comparison:

Although there are 78 different non-prescription pharmaceutical which are investigated in this survey, there are some retail outlets that had not all these products available. Almost all of the LUA-retail outlets had only, the minimum product assortment which is required[16], available. In case of price comparison between pharmacies and LUA-retail outlets there are made product baskets of only the products available in both retail outlet chains.

[16] See part 2.3.1. The LUA Directive

In order to examine the price fluctuation through different time periods, there are also made baskets of available products from the years 2003, 2006, 2008 and the current year, 2010. (Prisundersøkelsen 2010, NoMA)

| 10 Mest Observerte Produkter i LUA Utsalgssteder | | | |
|---|---|---|---|
| Produkter | Varenr. | Gjennomsnittlig pris (NOK) | % av butikker observert i |
| Paracetamol Paracet tab 500 mg 20 ENPAC rund | 517128 | 31,69 | 100,0 % |
| Ibuprofen Ibux tab 200 mg 20 ENPAC | 153569 | 43,61 | 95,8 % |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml (Voksen) | 166440 | 58,40 | 87,5 % |
| Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml (Barn) | 166097 | 55,56 | 79,2 % |
| Paracet mikstur 24 mg/ml 60 ml | 522433 | 34,24 | 75,0 % |
| Paracet stikkpille 250 mg 10 stk | 084970 | 39,84 | 75,0 % |
| Xylometazoline Otrivin 1mg/ml mentol | 166451 | 59,58 | 70,8 % |
| Phenazone, comb Fanalgin tab 20 ENPAC | 473439 | 37,41 | 58,3 % |
| Zyrtec, 10mg, Tabletter, 7stk | 586602 | 66,01 | 41,7 % |
| Nicotine Nicotinell tyggegummi 2 mg 96 ENPAC (alle smaker) | 019793 | 198,59 | 37,5 % |

**Table 3.2: The most available products in LUA retail outlets.**

# 4: Results

According to the findings of the price investigation in 2010, Prisundersøkelsen 2010, prices in pharmacies seemed to increase faster than the LUA-retail outlets. Although prices in kiosks and petrol stations are higher than the prices in pharmacies, there is still a huge price increase in the pharmacies in the period between 2003- 2010.

Price differences in all retail outlets for the 3 most common products are illustrated below.

| Mini prissammenligning av alle utsalgssteder | | | | | | |
|---|---|---|---|---|---|---|
| 3 mest vanlige produkter | | Gjennomsnittlig pris | | | | |
| | Kjedeapotek | Uavhengig apotek | Nettapotek* | Dagligvare | Kiosk | Bensin |
| Paracetamol Paracet tab 500 mg 20 ENPAC | 36,71 | 37,3 | 35,13 | 28,83 | 33,86 | 36,5 |
| Ibuprofen Ibux tab 200 mg 20 ENPAC | 48,19 | 49,83 | 47,17 | 38,15 | 48,67 | 52,75 |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml | 54,3 | 56,33 | 53,75 | 48,44 | 59,17 | 68,78 |
| Handlekurv total (NOK) | 139,20 | 143,46 | 136,05 | 115,42 | 141,7 | 158,03 |

**Table 4.1: Prices for 3 most common non-prescription pharmaceuticals**

Prices in grocery stores were the lowest and prices in gas stations were the highest. Prices in these two retail outlets differ up to 78%. As shown below:

| Alle utsalgssteder - max og min | | | | | |
|---|---|---|---|---|---|
| 2010 | Laveste pris, kr | Bransjetype | Høyeste pris, kr | Bransjetype | Differanse, % |
| Ibuprofen Ibux tab 200 mg 20 ENPAC | 33,50 | Dagligvare | 59,50 | Bensin | 78 % |
| Paracetamol Paracet tab 500 mg 20 ENPAC | 26,00 | Dagligvare | 42,00 | Bensin | 62 % |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml | 44,90 | Dagligvare | 75,00 | Bensin | 67 % |

**Table 4.2: Max-min prices in all LUA retail outlets.**

## 4.1: Price increase:

Prices have increased in both LUA retail outlets and pharmacies since LUA Directive was implemented.

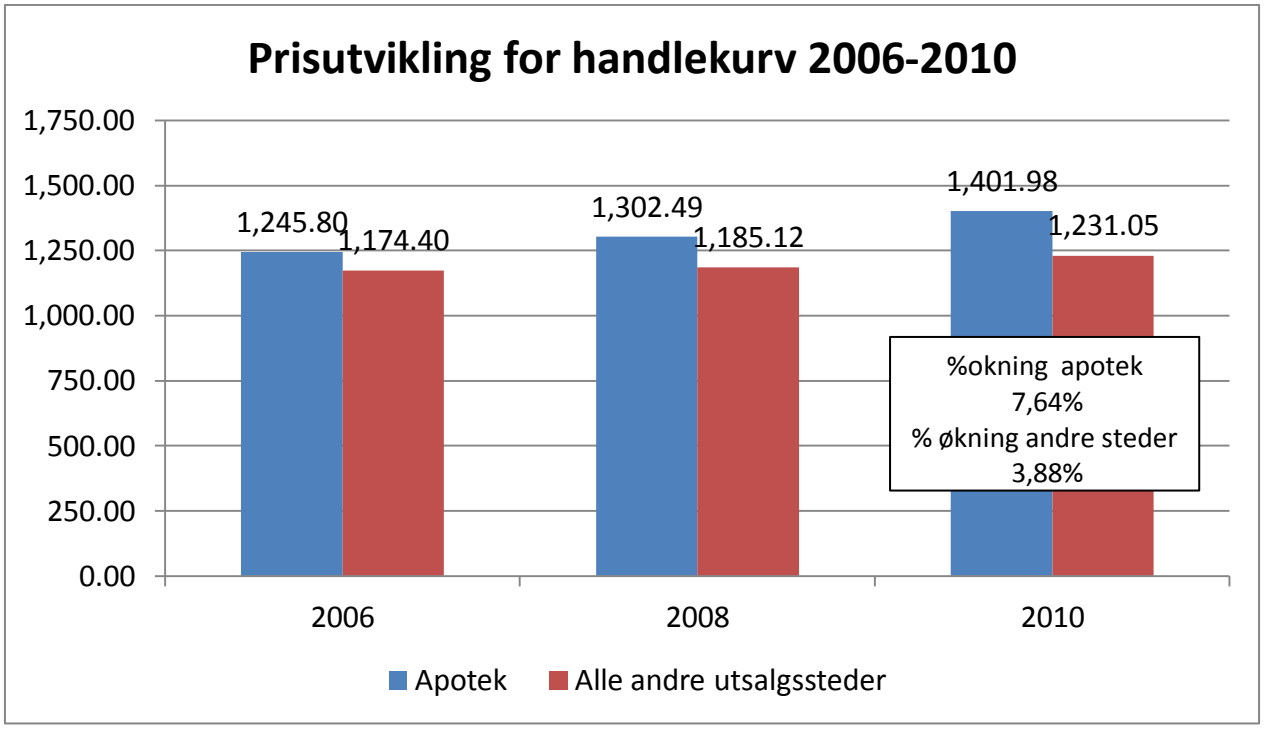


**Figure 4.1: Prices for a basket of 10 selected products 2006.**

The price increase in pharmacies from 2008-2010 was 7.64 %, while the price increase in all other sales locations was 3.88 % during the same period. The Consumer Price Index increased 4.42 % during this period. This indicates that prices in LUA-locations have decreased in real value between 2008-2010.

### 4.1.1: Pharmacies

Prices in pharmacies increased most since LUA Directive implemented. Prices for a basket of 15 products increased up to 30% since 2003. As shown below:

| Basket of 15 products 2003 | | | | |
|---|---|---|---|---|
| Year | 2003 | 2006 | 2008 | 2010 |
| NOKs | 1089,15 | 1182,79 | 1291,39 | 1419,16 |
| % Increase | | 8,6 | 9,2 | 9,9 |

**Table 4.3: Basket of 15 selected products 2003.**

The real price changes due to the consumer price index, CPI, are as following:

| Year | **2003** | **2006** | **2008** | **2010** |
|---|---|---|---|---|
| NOK | 1089 | 1183 | 1291 | 1419 |
| **Period** | | **2003-2006** | **2006-2008** | **2008-2010** |
| % changes since last investigation | Real | 4,3 % | 4,6% | 5,4% |
| % average changes per year | Real | 2,2% | 2,3% | 2,7% |

**Table 4.4: Basket of 15 selected products 2003.**

The table above shows that real price increase was at 5.4% in the period 2008- 2010. The table also shows that the average annual real price increase was at 2.3 % during the period between 2003- 2010.

### 4.1.2: LUA Retail Outlets

Even though prices of non-prescription pharmaceuticals in kiosks and petrol stations were higher than the pharmacies, the increase in nominal and real prices was not as large as the pharmacies. On the contrary, the real price increase was stable in petrol stations and decreased in kiosks as the following table illustrates.

| Year | **2006** | **2008** | **2010** |
|---|---|---|---|
| NOK | 278 | 330 | 337 |
| % Nominal change since last investigation | | 18,6% | 2,3% |
| % Real change since last investigation | | 14,0% | -2,2% |

**Table 4.5: The nominal and real price increases in kiosks from a basket of 6 selected products 2006.**

| Year | **2006** | **2008** | **2010** |
|---|---|---|---|
| NOK | 236 | 253 | 264 |
| % Nominal change since last investigation | | 7,3% | 4,5% |
| % Real change since last investigation | | 2,7% | 0,0% |

**Table 4.6: The nominal and real price increases in petrol stations from a basket of 5 selected products 2006.**

Due to the same price investigation, prices in grocery stores were the lowest compared to all other non-prescription pharmaceutical outlets. In terms of real price, prices in grocery stores decreased by 4.4% in the period between 2006- 2008 and increased only by 0.7% in the period between 2008- 2010. As shown in the table below:

| Year | **2006** | **2008** | **2010** |
|---|---|---|---|
| NOK | 1068 | 1069 | 1125 |
| % Nominal change since last investigation | | 0,2% | 5,2% |
| % Real change since last investigation | | - 4,4% | 0,7% |

**Table 4.7: The nominal and real price increases in grocery stores from a basket of 9 selected products 2006.**

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# 5: Conclusions

The main intention of this thesis has been to find out if LUA Directive has achieved its main purpose of implementation, which was to lead the market towards a perfect competition by letting other retail outlets than the pharmacies to provide non-prescription pharmaceuticals in the market. The idea was to increase the number of sellers and push the providers to become price takers.

As the results in this thesis indicate, the prices have been more or less increased through all the non-prescription pharmaceutical retail outlets since LUA Directive was implemented in 2003. Instead, a segment of total sales were transferred from pharmacies to the LUA retail outlets. Both pharmacies and LUA retail outlets focused more on adding several services to their products in order to turn their products superior to each other. Pharmacies focused on providing advice and guidance on collection and use of their products, while kiosks and petrol stations tried to differentiate their products by expanded opening hours and being centrally located.

Due to results from this thesis, LUA Directive turned rather in to a tool which directed to product differentiation and market segmentation, than leading the market towards perfect competition.

In further research studies, it will be interesting to find out if LUA Directive leads to abuse of non-prescription pharmaceuticals, or reduces the unnecessary GP-consultations by self-treatments as a result of increasing the availability.

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# 7: Appendix

**1: Figure 4.1:** The basket of 10 selected products 2006:

| **Produktene I handlekurven 2006** |
| --- |
| Ibuprofen Ibux tab 200 mg 20 ENPAC |
| Phenazone, comb Fanalgin tab 20 ENPAC |
| Paracetamol Paracet tab 500 mg 20 ENPAC |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml |
| Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml |
| Nicotine Nicorette tyggegummi 2 mg (peppermynte) 105 ENPAC |
| Nicotine Nicorette tyggegummi 4 mg 105 ENPAC |
| Nicotine Nicotinell tyggegummi 2 mg (frukt) 24 ENPAC |
| Nicotine Nicotinell tyggegummi 2 mg (peppermynte) 96 ENPAC |
| Nicotine Nicotinell tyggegummi 4 mg (frukt) 96 ENPAC |

**2: Table 4.3 and 4.4:** The basket of 15 selected products 2003:

| **Produktene i handlekurven 2003** |
| --- |
| Ibuprofen Ibux tab 200 mg 20 ENPAC |
| Paracetamol Paracet tab 500 mg 20 ENPAC |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml |
| Nicotine Nicorette tyggegummi 2 mg (peppermynte) 105 ENPAC |
| Ketoconazole Fungoral Sjampo 2% 60 ml |
| Phenazone, combinations excl psycholeptics Fenazon koff sterke Tabletter 20 stk |
| Oxymetazoline Rhinox nesespray 0,5 mg 10 ml |
| Levocabastine Livostin øyedråper 0,5 mg 4 ml |
| Chlorhexidine Corsodyl munnskyll 2 mg 300 ml |
| Clotrimazole Canesten Krem 1 % + 6 vagitorer komb pak |
| Paracetamol Panodil Tabletter 500 mg 20 enpac |
| Xylometazoline Zymelin nesespray 1 mg 10 ml |
| Paracetamol Pamol Tabletter 500 mg 20 enpac |
| Calcium, combinations with other drugs Calcigran Tabletter 100 stk |
| Loperamide Imodium Tabletter 2 mg 16 enpac |

**3: Table 4.5:** The basket of 6 selected products 2006:

| **Produktene i handlekurven 2006** |
|---|
| Ibuprofen Ibux tab 200 mg 20 ENPAC |
| Phenazone, comb Fanalgin tab 20 ENPAC |
| Paracetamol Paracet tab 500 mg 20 ENPAC |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml |
| Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml |
| Nicotine Nicotinell tyggegummi 2 mg (frukt) 24 ENPAC |

**4: Table 4.6:** The basket of 5 selected products 2006:

| **Produktene i handlekurven 2006** |
|---|
| Ibuprofen Ibux tab 200 mg 20 ENPAC |
| Phenazone, comb Fanalgin tab 20 ENPAC |
| Paracetamol Paracet tab 500 mg 20 ENPAC |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml |
| Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml |

**5: Table 4.7:** The basket of 9 selected products 2006:

| **Produktene i handlekurven 2006** |
|---|
| Ibuprofen Ibux tab 200 mg 20 ENPAC |
| Phenazone, comb Fanalgin tab 20 ENPAC |
| Paracetamol Paracet tab 500 mg 20 ENPAC |
| Xylometazoline Otrivin nesespray 1 mg/ml u/kon 10 ml |
| Xylometazoline Otrivin nesespray 0,5 mg/ml u/kon 10 ml |
| Nicotine Nicorette tyggegummi 2 mg (peppermynte) 105 ENPAC |
| Nicotine Nicorette tyggegummi 4 mg 105 ENPAC |
| Nicotine Nicotinell tyggegummi 2 mg (peppermynte) 96 ENPAC |
| Nicotine Nicotinell tyggegummi 4 mg (frukt) 96 ENPAC |